Clean Air Act 101
MODULE 4 – Title IV
Acid Rain

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Title IV – Acid Rain

- Acid rain or deposition occurs when sulfur dioxide (SO_2) and nitrogen oxide (NOx) emissions are transformed in the atmosphere and return to earth in rain, fog, and snow.
- Acid rain damages lakes, harms forests and buildings, contributes to reduced visibility, and is suspected of damaging health.
- The pollutants that form acid rain come mostly by the burning of fossil fuels in electric generating units (EGUs).

Before the 1990 Clean Air Act Amendments

- EPA could not address the problem of acid rain directly.
- There was (and is) the stack height provisions of Section 123 of the CAA for sources built after 1970.
- Stack heights are limited to Good Engineering Practice (GEP) when modeling the impacts for purposes of Title I of the CAA.
- No other dispersion techniques are allowed – meaning any intermittent or supplemental controls varying with atmospheric conditions.

The 1990 CAA Amendments
Title IV
Cap and Trade Goes National

Sulfur Dioxide

- SO_2 Reduction: A 10 million ton reduction from 1980 levels, primarily from utility sources. Capped annual utility SO_2 emissions at approximately 8.9 million tons by 2000.
- Allowances: SO_2 reductions are met through an innovative market-based system. Affected sources were allocated allowances based on required emission reductions and past energy use.

Sulfur Dioxide

continued

- An allowance is worth one ton of SO_2 and it is fully marketable.
- Sources must hold allowances equal to their level of emissions or face a $2000/excess ton penalty and a requirement to offset excess tons in future years.
- EPA also holds special sales and auctions of allowances.

Sulfur Dioxide

continued

- SO_2 emission reductions were achieved in two phases.
- Phase I allowances were allocated to large units of 100 MW or greater that emit more than 2.5 lb/MMBtu in an amount equal to 2.5 lb/MMBtu x their 1985-87 energy usage (baseline).

Sulfur Dioxide

continued

- Phase I had to be met by 1995 but units that installed certain control technologies were allowed to postpone compliance until 1997, and were potentially eligible for bonus allowances.
- Units in Illinois, Indiana or Ohio were allotted a pro rata share of an additional 200,000 allowances annually during Phase I.

Sulfur Dioxide

continued

- Phase II: Phase II began in 2000. All utility units greater than 25 MW that emit at a rate above 1.2 lbs/MMBtu were allocated allowances at that rate x their baseline fuel consumption.

- Cleaner plants generally were provided with 20% more allowances than would have been received based on their baseline consumption.

Sulfur Dioxide

continued

50,000 bonus allowances were allocated to plants in 10 Midwestern states that made reductions in Phase I.

Nitrogen Oxides

- Nitrogen oxides reduction: Utility NOx reductions were required to achieve a 2 million ton reduction from 1980 levels.
- Reductions were accomplished through required EPA performance standards for certain existing boilers in Phase I, and others in Phase II.
- Title IV of the 1990 CAA Amendments directed EPA to develop a revised NOx NSPS (40 CFR Part 60) for utility boilers.

Repowering

- Units repowering with qualifying Clean Coal Technologies received a 4-year extension for Phase II compliance.
- Such units may be exempt from New Source Review requirements and New Source Performance Standards.
- See Section 415(b)

Energy Conservation & Renewable Energy Projects

Under Title IV

These projects were eligible to be allocated a portion of up to 300,000 incentive allowances.

Clean Coal Technologies (CCT)

- Under the 1990 CAA Amendments:
- Certain CCT demonstration projects may be exempt from NSPS, NSR, and Title I nonattainment requirements.

Monitoring

Title IV of the 1990 CAA amendments requires continuous emission monitors or an equivalent for SO_2 and NOx on sources subject to the acid rain program.

How is the Acid Rain Program Implemented?

- The buying, selling and trading of allowances is “tracked” by EPA.
- The acid rain program is implemented through permit conditions of subject sources’ Title V operating permits.
- Title V Operating Permits are the subject of Module 5 of Clean Air 101.

End of Clean Air Act 101
Module 4 – Acid Rain